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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,570	02/04/2004	W. Curt Lefebvre	NC9441US	3723

22203 7590 03/16/2010

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
3684	

MAIL DATE	DELIVERY MODE
03/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/771,570	LEFEBVRE ET AL.	
	Examiner	Art Unit	
	GERALD C. VIZVARY	3684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,18-20,22 and 24-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 18-20, 22, 24-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In the amendment filed 12/11/2009, the following has occurred:

   a. Claims 1, 4, 5, 18, 22, 24-31, 34 have been amended.

   b. Claims 6-17, 21 & 23 have been canceled.

Now, claims 1-5, 18-20, 22, 24-41 are presented for examination.

Claim Rejections - 35 USC § 101

2. Following the Applicant's amendments filed 12/11/2009, the rejections based on 35 USC § 101 are hereby withdrawn.

Claim Rejections - 35 USC § 112

3. Following the Applicant's amendments filed 12/11/2009, the rejections based on 35 USC § 112 are hereby withdrawn

Response to Arguments

4. In the remarks filed on 12/11/2009, Applicant argues that neither Soestbergen et al. nor Werbos, taken individually or in combination, anticipates or renders obvious the applicant's invention as now defined by the amended claims. In particular, it should be noted that neither cited references is directed to a method for assigning a credit that measures the contribution of an input to a

global output of a network, wherein the global output is a profit generated by operation of the fossil fuel power plant.

In response to applicant's argument, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

It should be noted that *KSR* forecloses Applicant's arguments requiring a specific teaching, suggestion or motivation to combine the references since the intended functions of the references have not been changed and the combination would have yielded predictable results.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 18-20, 22, 24-25, 30-34, and 39-41 rejected under 35 U.S.C. 103(a) as being unpatentable over Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1.

As per claim 1 (currently amended) [[For]] In a network comprised of a plurality of interconnected process management modules respectively ~~processes~~ associated with processes for operation of a fossil fuel power plant, a method for assigning credit to a first input of a first process for operation of the fossil fuel power plant ~~with respect,~~ the credit measuring a contribution of the first input to a global output of the network ~~indicative of~~, wherein the global output is a profit generated by operation of the fossil fuel power plant, the first process having a plurality of inputs and outputs, at least one of said outputs of the first process being a chained output that is an input to a second process for operation of the fossil fuel power plant and contributes to the global output of the network, the method comprising:

obtaining [[a]]credit assignments ~~assignment~~ for each of the chained outputs of the first process for operation of the fossil fuel power plant with respect to the global output ~~of the network indicative of the profit generated by the fossil fuel power plant~~, wherein the credit assigned to each of the chained outputs of the first process are a measure of the contribution of the chained output on the global output ("FIG. 14 describes a method for using an external database to report greenhouse gas (GHG) emission quantities and purchasing the offsetting amount of ERC's." Soestbergen US 2002/0143693 A1 ¶ [0034]) and ("In one embodiment

of the method, the invention provides a method for registration of carbon sinks including renewable energy and emission reduction systems, wherein a carbon sink represents an asset in an account, the method includes: (a) receiving information to identify a customer account; (b) receiving input to identify type of carbon sink; (c) receiving input data used to calculate emission reduction provided by the carbon sink; (d) calculating an emission reduction credit (ERC) value representative of the renewable energy and emission reduction provided by the carbon sink; and (e) crediting a percentage of the ERC value to the customer account." Soestbergen US 2002/0143693 A1 ¶ [0016]);

Soestbergen US 2002/0143693 A1 fails to explicitly teach

using a model-based controller having a first-order differentiable model of the first process ~~of the fossil fuel power plant~~ to derive a local credit assignment for the first input of the first process, wherein the local credit assigned to the first input is a measure of the contribution of the first input on outputs of the first process; and using a local processor to apply ~~applying~~ a chain rule for ordered partial derivatives using (a) the first-order differentiable model of the first process, (b) the local credit assignment for the first input, and (c) the credit assignments for the chained outputs of the first process ~~with respect to the global output~~ to assign the credit to the first input of the first process ~~with respect to the global output of the network.~~

Werbos US 6,532,454 B1 teaches "BTT [26] can be used to reduce the cost of computing exact derivatives through any feedforward differentiable system, not just neural networks." (Werbos US 6532454 B1 col. 4, lines 47-49) and "This is

not a complete description of the problem, because it does not specify how to compute the derivatives that appear in equation 21. This is not just a matter of computation; there is also a need to specify which partial derivatives or gradient are used." (Werbos US 6,532,454 B1 col. 20, lines 25-29)

It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Soestbergen US 2002/0143693 A1 to include a model-based controller having a first-order differentiable model as taught by Werbos US 6,532,454 B1. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Soestbergen US 2002/0143693 A1 in this way in order to trade of ERC's from one location to another (see at least ¶ [0007] of Soestbergen US 2002/0143693 A1).

As per claim 2 (original), Examiner notes that the recitation "the first-order differentiable model is a neural network" has not been given patentable weight because the intended use is not functionally related to the method steps. Thus, this nonfunctional descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994). Additionally, Applicant is requested to explain how a neural network constitutes a differentiable model.

As per claim 3 (original), Examiner notes that the recitation "the first-order differentiable model is a first-principles model" has not been given patentable

weight because the intended use is not functionally related to the method steps. Thus, this nonfunctional descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

As per claim 4 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the method includes managing the first process ~~is managed by~~ using a first process management module and ~~the first process management module determines~~ determining the credit assignment of the first input using the first process management module. ("The Exchange Module of the subject invention is an online carbon credit trading function for carbon credit speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

As per claim 5 (currently amended)) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses managing the first process ~~is managed by~~ using a first process management module; and

~~the first process management module transmits~~ transmitting the local credit assignment over [[a]] the network, from the first process management module, to a second process management module, wherein ~~program that~~ the second

process management module computes the credit assignment for the first input. ("The Exchange Module of the subject invention is an online carbon credit trading function for carbon credit speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

Claims 6-17 (canceled)

As per claim 18 (currently amended) Soestbergen US 2002/0143693 A1 discloses a computer program product ~~residing~~ stored on a computer readable medium for use in analyzing a first process for operation of a fossil fuel power plant, the first process having a plurality of inputs and at least one output, at least one of said outputs being a chained output that is an input to a second process in [[the]] a network of process management modules respectively associated with processes for operation of the fossil fuel power plant, and contributes to a global output ~~indicative of~~ the network, wherein the global output is a profit generated by operation of the fossil fuel power plant, the computer program product containing instructions for causing a computer to:

obtain [[a]] credit assignments ~~assignment~~ for each of the chained outputs of the first process for operation of the fossil fuel power plant with respect to the global output ~~indicative of the profit generated by the fossil fuel power plant~~ using an application program interface, wherein the credit assigned to each of the chained outputs of the first process are a measure of the contribution of the chained outputs on the global output ("The present invention relates to a method and

system for the banking and trading of emission reduction credits (ERC's). Specifically, the invention relates to a method and system for a global online venue for the issuing of ERC's to renewable energy systems, for their reduction or their need for fossil fuels, and the transferring of ERC's to systems in need of ERC's." Soestbergen US 2002/0143693 A1 ¶ [0004]), ("As a computer system, part of the invention generally includes a database and a processor unit. The processor unit operates to receive information regarding emission output or emissions reduction methods utilized, analyzing the received information to generate emissions reports stating the amount of ERC's needed or the ERC's available for trade. The output may include print or electronic media." Soestbergen US 2002/0143693 A1 ¶ [0020]) and ("Furthermore, the subject invention quantifies emission reduction achieved by renewable energy systems on instantaneously, crediting the system owner's account with the realized ERC's, tagging the ERC's and making those reductions available for purchase in one integrate system." Soestbergen US 2002/0143693 A1 ¶ [0026]);

Soestbergen US 2002/0143693 A1 fails to explicitly teach obtaining a first-order-differentiable model of the first process ~~of the fossil fuel power plant~~ ; and

apply a chain rule for ordered partial derivatives to the first-order-differentiable model using the credit assignments for the chained outputs of the first process ~~with respect to the global~~ output to determine a credit of the first input of the first process with respect to the global output of the network, wherein the credit of the first input is a measure of the contribution of the first input on the global output.

Werbos US 6,532,454 B1 teaches "BTT [26] can be used to reduce the cost of computing exact derivatives through any feedforward differentiable system, not just neural networks." (Werbos US 6532454 B1 col. 4, lines 47-49) and "This is not a complete description of the problem, because it does not specify how to compute the derivatives that appear in equation 21. This is not just a matter of computation; there is also a need to specify which partial derivatives or gradient are used." (Werbos US 6,532,454 B1 col. 20, lines 25-29)

It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system of Soestbergen US 2002/0143693 A1 to include differentiable models as taught by Werbos US 6,532,454 B1. One of ordinary skill in the art at the time of the invention would have been motivated to expand the system of Soestbergen US 2002/0143693 A1 in this way to provide adaptive-predictive control to stabilize large-scale economic equilibrium models, such as the old long-term energy model (see at least the abstract of Werbos US 6,532,454 B1).

As per claim 19 (original), Examiner notes that the recitation "the first-order-differentiable model is a neural network" has not been given patentable weight because the intended use is not functionally related to the method steps. Thus, this nonfunctional descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see In re Gulack, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

As per claim 20 (original), Examiner notes that the recitation "the first-order-differentiable model is a first-principles model" has not been given patentable weight because the intended use is not functionally related to the method steps. Thus, this nonfunctional descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see In re Gulack, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Claim 21 (canceled)

As per claim 22 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.
Soestbergen US 2002/0143693 A1 fails to explicitly teach that the first-order-differentiable model is changed due to (a) a change in operating region of the first process, (b) retaining of the model, or (c) a physical change in the first process ~~can be adapted.~~
Werbos US 6,532,454 B1 teaches "Adaptive control" [1-3] has often been viewed as a tool for addressing the second type of uncertainty--uncertainty about drifting plant parameters." (Werbos US 6,532,454 B1 col. 3, lines 7-9)
It would have been obvious to one of ordinary skill in the art at the time of the invention to include adaptive control as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of addressing

uncertainty in plant parameter drift, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

Claim 23 (canceled)

As per claim 24 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

wherein said first and second processes for operation of the fossil fuel power plant are selected from the group consisting of the following processes: combustion optimization, sootblowing optimization, boiler performance optimization, selective catalytic reduction (SCR) optimization, flue gas desulfurization (FGD) optimization, and profit optimization. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes

a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 25 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is combustion optimization, said first input of the first process is selected from the group consisting of: O2 trim, over fire air (OFA), mill biases, SAD, and cleanliness; and an output of the first process is selected from the group consisting of: boiler losses, boiler NOx and boiler SOx. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 26 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is sootblowing optimization, said first input of the first process is selected from the group consisting of: location, pressure and frequency of sootblowing operations; and an output of the first process is selected from the group consisting of: soot losses and cleanliness. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country

with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

As per claim 27 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is SCR optimization, said first input of the first process is selected from the group consisting of: boiler NO_x and NH_3; and an output of the first process is selected from the group consisting of: SCR losses and NO_x. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes

a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 28. (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is FGD optimization, said first input of the first process is selected from the group consisting of: boiler SO_x and limestone; and an output of the first process is selected from the group consisting of: FGD losses and SO_x. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's

from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 29. (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is boiler performance optimization, said first input of the first process is selected from the group consisting of: soot losses, cleanliness, boiler losses, SCR losses and FGD losses; and an output of the first process is selected from the group consisting of: heat rate (HR) and MW. ("As a result, emissions trading was

introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 30 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses managing the first process ~~is managed by~~ using a first process management module, ~~wherein~~ the first management module [[is]] selected from the group consisting of: a module for optimizing combustion; a module for optimizing sootblowing; a module for optimizing boiler performance ("The Exchange Module of the subject invention is an online carbon credit trading function for carbon credit speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 31 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that said interconnected processes the process management modules include a third process ~~that is profit optimization, the third process~~ having a plurality of inputs and an output that is said global output of the network ~~indicative of the profit generated by the fossil fuel power plant,~~ wherein the third process is profit optimization. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

As per claim 32 (previously presented) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 31.

Soestbergen US 2002/0143693 A1 further discloses that an input of said third process is selected from the group consisting of: heat rate (HR), MW, NOx, NH3, SO, limestone, emission credits, and fuel costs. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct

wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

As per claim 33 (previously presented) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that said first and second processes of the fossil fuel power plant are selected from the group consisting of the following processes: combustion optimization, sootblowing optimization, boiler performance optimization, selective catalytic reduction (SCR) optimization, flue gas desulfurization (FGD) optimization, and profit optimization. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 34 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is combustion optimization, said first input of the first process is selected from the group consisting of: O2 trim, over fire air (OFA), mill biases, SAD, and cleanliness; and an output of the first process is selected from the group consisting of: boiler losses, boiler NOx and boiler SOx. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may

construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

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Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 35 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is sootblowing optimization, said first input of the first process is selected from the group consisting of: location, pressure and frequency of sootblowing operations; and an output of the first process is selected from the group consisting of: soot

losses and cleanliness. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 36 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is SCR optimization, said first input of the first process is selected from the group consisting of: boiler NOx and NH3; and an output of the first process is selected from the group consisting of: SCR losses and NOx. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed

the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 37 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is FGD optimization, said first input of the first process is selected from the group consisting of: boiler SOx and limestone; and an output of the first process is selected from the group consisting of: FGD losses and SOx. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 38. (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18. Soestbergen US 2002/0143693 A1 further discloses that the first process is boiler performance optimization, said first input of the first process is selected from the group consisting of: soot losses, cleanliness, boiler losses, SCR losses and FGD losses; and an output of the first process is selected from the group consisting of: heat rate (HR) and MW. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 39 (previously presented) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is managed by a first process management module, wherein the first management module is selected from the group consisting of: a module for optimizing combustion; a module for optimizing sootblowing; a module for optimizing boiler performance; a module for optimizing selective catalytic reduction (SCR); and a module for optimizing flue gas desulfurization (FGD). ("The Exchange Module of

the subject invention is an online carbon credit trading function for carbon credit speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 40 (currently amended) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that a ~~interconnected processes include~~ a third process ~~that is profit optimization, the third process~~ having a plurality of inputs and an output that is said global output of the network ~~indicative of the profit generated by ,the fossil fuel power plant~~, wherein the third process is profit optimization. ("The dollar amount needed to purchase the ERC's needed to offset is returned to the external database 246. Upon deciding

to purchase, payment amount and information (Bank ID, acct. no., etc.) 247 is submitted 248 and processed 251." Soestbergen US 2002/0143693 A1 [0089])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 41 (previously presented) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 40.

Soestbergen US 2002/0143693 A1 further discloses that an input of said third process is selected from the group consisting of: heat rate (HR), MW, NOx, NH3, SO, limestone, emission credits, and fuel costs. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from

emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Conclusion

6. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gerald C. Vizvary whose telephone number is 571-270-3268. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Abdi Kambiz can be reached on 571-272-6702. The fax phone number for the organization where this application or proceeding is assigned is 571-270-4268.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gerald Vizvary
Patent Examiner, A.U. 3684
March 10, 2010

/Nga B. Nguyen/
Primary Examiner, Art Unit 3684